

As part of a local effort to improve water quality in the Chicago Area Waterway System (CAWS), it is time to clean up the Chicago River to ensure that it is safe for recreational activities such as boating and swimming. Chicago is the only major city that does not disinfect its wastewater. The EPA has called for an aggressive cleanup of the Chicago River and in June 2011, MWRDGC voted to disinfect the wastewater dumped into the Chicago River. Seventy percent of the water in the Chicago River is made up of sewage or “effluent” material. In the near-term, it is important to work with local and state officials to see that this is completed to reduce the threat to public health and the environment. The Chicago River supports over six million residents in the city and it is time to disinfect sewage effluent that is dumped into river that runs through the nation’s third largest city.

## **MERCURY CONTAMINATION**

### **➤ Grade: Incomplete**

*Explanation:* Gaps in our knowledge of mercury levels in the Great Lakes make it very difficult to accurately grade the status of mercury in Lake Michigan. There is currently not enough data collected on Lake Michigan to understand the levels of harmful mercury or methyl mercury within the water column.

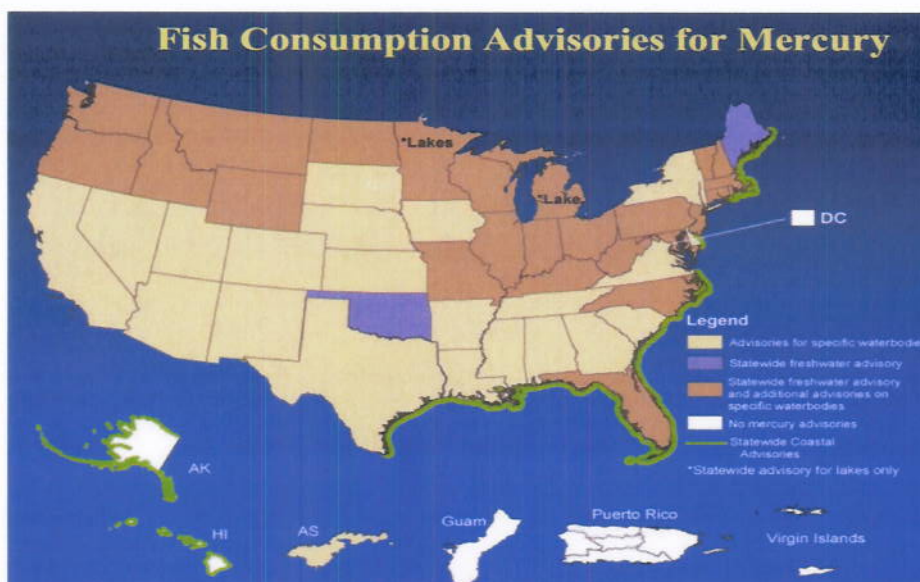
Mercury (Hg) is an element that is found naturally in minerals, rocks, plants soil, water, and the air. As it enters the environment through soil and lakes, mercury can be converted to a more toxic form, called methyl mercury, by bacteria. Methylmercury (MeHg) is particularly concerning since large amounts of methyl mercury can accumulate in fish tissue.

Human exposure to methylmercury most directly occurs through consumptions of contaminated fish. Mercury is a neurotoxin that can cause permanent developmental effects in young children. Mercury can adversely affect the human nervous system, brain function, and cause birth defects. EPA estimates that more than 300,000 newborns in the U.S. are born with unsafe levels of mercury in their system every year.

Although mercury levels in Lake Michigan are poorly understood, direct effluent discharge from industrial facilities, runoff from urban areas and atmospheric deposition to surface water and the surrounding watershed are all likely pathways for mercury into the Great Lakes. Mercury and Polychlorinated Biphenyls (PCB's) are two of the most common contaminants in aquatic ecosystems.

Total mercury levels in sediment and fish will vary depending on the ecology of the areas and the ability of various organisms to sequester mercury from the environment. Inland lakes tend to have higher concentration for mercury than the Great Lakes. Lacking a consistent monitoring program, fish advisories of our inland lakes are a clear indicator that mercury levels are indeed a problem in the Great Lakes region. Currently all of the states and provinces on the Great Lakes Region have fish consumption advisories due to methylmercury contamination for inland lakes and their connecting waters. The Illinois Department of Public Health has issued a statewide methylmercury advisory for predator fish, including a variety of bass, walleye, pike, and catfish. Although, current fish advisories for mercury for the Great Lakes region are for inland water bodies, this should not discount the serious threat mercury poses to the environment and Lake Michigan.





Source: EPA National Fish and Wildlife Contamination Program, 2008

Data from a 2007 NOAA Report to Congress on Mercury Contamination in the Great Lakes illustrated that sediment mercury concentrations have declined since 1970s—a trend that was reconfirmed by the findings of Paul E. Drevnick, published in *Environmental Pollution* in May 2011. This study focuses on the historic and recent changes in mercury deposition in sediment core samples from the Great Lakes (Ontario, Michigan, and superior) and inland lakes and confirms that mercury levels in core sediments in Lake Michigan have declined in the last 30 years. Unfortunately, at the time of the NOAA report trends in mercury levels in biota for Lake Michigan were unidentifiable due to lack of data.

Analysis of mercury in core sediments and other aspects, such as surface water and fish tissue, are only pieces of greater understanding of the mercury fluxes in Lake Michigan water and the implications for human health. Currently, the Great Lakes Restoration Initiative is supporting mercury related projects throughout the Great Lakes Basin, including research that specifically targets mercury cycling and bioaccumulation in the Great Lakes. More data is greatly needed for a more comprehensive understanding of the cycling of mercury in the environment and the resulting accumulation in organisms.

#### ➤ Action Items:

- 1) EPA should review/update mercury monitors and tests

The correlation between mercury cycling and the bioaccumulation in Lake Michigan organisms is poorly understood. The EPA must review and update its existing mercury monitoring protocols to achieve a better understanding of mercury levels in our water and should report to Congress the trend of mercury contamination in the lakes.

## LAKE MICHIGAN WATER LEVELS

### ➤ Grade: D

*Explanation:* This section uses the maximum historic water level recorded for Lake Michigan-Huron as the benchmark. For every foot water levels decrease from the maximum water level of 582 feet, a letter grade is deducted; A = 0-1ft, B= 1-2, C= 2-3, D= 3-4, F= 4+